

New York Sept 16 1889
 Superintendent of the Mint
 Sir;

I am inclined to differ as to the misapprehension referred to in your letter of the 13th inst. I think my own experience as an engraver and the sufficiently high authorities consulted in the matter has given me some idea of what I had found out.

In order to make the matter clear I will endeavor to explain the difference between mine and the processes now in general use for hardening dies for reproducing engraving.

You must of necessity understand that a steel die hardened by any of the processes now in use are oxidized more or less on the surface, in the cyanide of potassium method the result is a specie of ~~white~~ fine white frosting. This frosting or oxidize is universal and attacks graver cuts and polished surfaces alike. Such a surface is entirely foreign to a soft die. It may be removed and a polish effected by such methods in general as apply to a soft die. But you can not restore the surface of a graver cut except with a graver, and it is simply impossible to cut a hard steel die with a graver. You may polish it, but a graver cut represents a surface and effect of its own and can not be removed except

by a repetition of the original means. I would venture to state that the engraving now applied to coins has been ~~severely~~ spoiled in the hardening of the hub and die. If you wish to test the value of that assertion, let one of your engravers recut our single line on a gold, silver, or nickel or copper coin and then ~~cut~~ compare it with the same line reproduced from a stamp and ~~note~~ which is sharp and effective and shows up for its full value, and which is not. Furthermore if you think your methods and processes represent the millennium of excellence I would suggest another test: Finish a flat steel surface to a high polish, then engrave on it any small subject, an eagle say, shade it up as close and fine as a watch case or jewelry engraver would (it would be a good idea to have a watch case engraver do it) and then harden it with your best skill and find the same highly finished ~~but~~ and effective bird if you can.

But that is exactly what I ~~do~~ do. I bring a die out of the fire exactly as it went in, that is, harden a die and yet preserve intact every particle of the effect applied to the soft die.

To reproduce engraving on watch cases and jewelry has been a standing impossibility up to

Present time nothing has been produced
on the market as yet but a poor imitation that sells as
stamped work.

With a hub or die that must be finished
up after it is hardened you are limited to
such ornamental effects as are now used.
To aspire to anything like an artistic result
~~is entirely~~ the graver and all its variations
are barred out, for a finishing effect.

Moreover such a departure as I suggest
would represent a great saving of time,
and a vast improvement in the results pro-
duced in the die sinking department, as in
my process the design would be finished up com-
plete on the soft hub, there would be no nec-
essity of ^{re}polishing either the hardened hub or
die, And as the engraver would have a ~~great~~
greater command over soft steel the results would
be proportionately better.

You will find enclosed a general de-
scription of my process. It is in the patent
office yet, but I will trust to your con-
fidence in the matter.

Respt yours

Thomas F. Hawry
246 E. 19th St
New York
City

I will not attempt a detailed description but in brief

The die is electro-plated with a thick shell of nickel, copper, silver, or gold, or any combination of the metals mentioned, nickel is perhaps the best metal to use in most cases. A thick shell of nickel of, say about $\frac{1}{64}$ or $\frac{1}{100}$ of an inch thick may be first deposited on the die thru a light coating of silver, or silver and copper, over that.

The plated die is then packed in bone-black or a combination of bone-black ^{and} plumage, ~~or~~ in an iron crucible and placed in a charcoal fire, preferably.

When the proper heat for hardening is attained the die is lifted ~~down~~ out and plunged in cold water.

Some undesirable portion of the plating is then removed to expose a portion of the steel to watch the color and the die carefully reheated in an iron crucible or box until the proper color is produced for tempering it is then plunged in water or oil.

The shell may be pried, lifted, or torn off, and the result is a hard, perfectly finished die, the shell receiving the oxide that would otherwise attack the surface of the steel.

Thomas F. Henry.

New York

Sept. 16. 1889

Thomas L. Haney

Further explanation
of his patent for hardening
bricks & protecting their
surface.



[Abstract:] Further explanation of his patent for hardening Dies & protecting their surface.

New York,
September 15, 1889

Superintendent of the Mint

Sir;

I am inclined to differ as to the misapprehension referred to in your letter of the 13th inst. I think my own experience as an engraver and the sufficiently high authorities consulted in the matter has given me some idea of what I had found out.

In order to make the matter clear I will endeavor to explain the difference between mine and the processes now in general use for hardening dies for reproducing engraving.

You must of necessity understand that steel dies hardened by any of the processes now in use are oxidized more or less on the surface, in the cyanide of potassium method the result is a specie of fine white frosting. This frosting or oxidize is universal and attacks gravure cuts and polished surfaces alike. Such a surface is entirely foreign to a soft die. It may be removed and a polish effected by such methods in general as apply to a soft die. But you can not restore the surface of a gravure cut except with a gravure, and it is simply impossible to cut a hard steel die with a gravure. You may polish it, but a gravure cut represents a surface and effect of its own and can not be reused except by a repetition of the original means. I would venture to state that the engraving now applied to coins has been spoiled in the hardening of the husband die. If you wish to test the value of that assertion, but one of your engravers recut one single line on a gold, silver, or nickel or copper coin and then compare it with the same line reproduced from a stamp and note which is sharp and effective and shows up for its full value, and which is not. Further more if you think your methods and processes represent the millennium of excellence I would suggest another test: Finish a flat steel surface to a high polish, then engrave on it any small subject, an eagle say, shade it up as close and fine as a watch case or jewelry engraver would (it would be a good idea to have a water case engraver do it) and then harden it with your best skill and find the same highly finished and effective bird if you can. But that is exactly what I do. I bring a die out of the fire exactly as it went in. That is, harden a die and yet preserve intact very particle of the effect applied to the soft die.

To reproduce engraving on watch cases and jewelry has been a standing impossibility up to present time nothing has been produced on the market as yet but a poor imitation that sells as stamped work.

With a hub or die that must be finished up after it is hardened you are limited to such ornamental effects as are now used. To aspire to anything like an artistic result the gravure and all its variation are barred out, for a finishing effect.

Moreover such a departure as I suggest would represent a great saving of time, and a vast improvement in the results produced in the die-sinking departments, as in my process the design

would be finished up complete on the soft hub, there would be no necessity of repolishing either the hardened hub or die. And as the engraver would have a greater command over soft steel the results would be proportionately better.

You will find enclosed a general description of my process. It is in the patent office yet, but I will trust to your confidence in the matter.

Respt. Yours,
Thomas F. Haney
246 E. 19th St.
New York City

[Enclosed note:]

I will not attempt a detailed description but in brief.

The die is electro-plated with a thick shell of nickel, copper, silver, or gold, or any combination of the methods mentioned, nickel is perhaps the best metal to use in most cases. A shell of nickel of, say about 1/64 or 1/100 of an inch thick may be first deposited on the die then a light coating of silver, or silver and copper, over that. The plated die is then packed in bone-black or a combination of bone-black and plumbago, in an iron crucible and placed in a charcoal fire, preferably.

When the proper heat for hardening is attained the die is lifted out and plunged in cold water. Some undesirable portion of the plating is then removed to expose a portion of the steel to watch the color and the die carefully re-heated in an iron crucible or box until the proper color is produced for tempering. It is then plunge in water or oil.

The shell may be pried, lifted, or torn off, and the result is a hard, perfectly finished die, the shell receiving the oxide that would otherwise attack the surface of the steel.

Thomas & Harvey